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Foreign Assistance, Institutional Quality and Economic Growth in Selected Sub-Saharan African Countries: 1990 – 2021

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Abstract
This study adopts the Augmented Mean Group (AMG) estimator to analyse the impact of institutional quality and foreign assistance on economic growth in Sub-Saharan African countries, using time series data sourced from the World Bank Development Indicators (WDI) and World Bank Governance Indicators (WGI) for the period 1990 to 2021. The study went a step further to determine whether there is a significant interactive development effect of foreign assistance and institutional quality in sub-Saharan African countries. The results show that foreign assistance has a positive conditional marginal effect on per-capita GDP, institutional quality has a positive conditional marginal impact on per-capita GDP and their interaction is also positive. The results are all statistically significant at 10% level of significance. Thus, foreign assistance and good quality institutions improves economic growth. This does not imply that; sub-Saharan African region should heavily rely on foreign assistance, without putting in place specific developmental efforts. Thus, it is opined that policymakers should regulate the allocation of foreign assistance and improve the quality of institutions. In doing so, the production capacity of the region would increase and the region would attract huge amount of foreign direct investment (FDI). Consequently, there would be a distinction between the amount of foreign assistance needed to lessen poverty and the levels of foreign assistance required to achieve economic growth.
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1.0 Introduction

The importance of foreign assistance and good quality institutions in the growth and development of an economy cannot be over-emphasized, as it plays a key role in differentiating between rich and poor countries. Foreign assistance-induced transition to sustainable economic growth is one of the key issues of concern to development economists, researchers, and policymakers in Africa. Foreign assistance broadly refers to the grants, loans, technical support, training, equipment, and commodities by donor countries to recipient countries. Abdul, Adamu & Ogwuche,(2018). It represents resource flows to developing nations. Foreign assistance from rich donor countries to poorer recipient countries is usually triggered by humanitarian, altruistic factors, and is also often used as a means of advancing the national interests of donor countries Murshed & Khanaum (2012). In structure, foreign assistance can either be bilateral (between two countries) or multilateral (involving more than two countries). Foreign assistance can also be conditional (tied aid), a case where aid is dependent on the condition that it must be used to purchase goods/services from the donor. It may also be unconditional (untied aid), a case in which the recipient country is free to procure goods/services from any country of choice Arvin & Baum (1997).

The Organization of Economic Cooperation and Development (OECD) countries have been the source of most of the foreign assistance received by sub-Saharan Africa through their Development Assistance Committee (DAC). However, over the past 30 years, sub-Saharan Africa has witnessed the entry of new, non-traditional donors referred to as emerging donors Chapponnière,(2009). The rise in importance of these non-traditional donors led by China has reopened the discussion on the usefulness of foreign assistance. The economic presence of China in Africa has particularly stimulated debates on aid effectiveness in sub-Saharan Africa (Balcilar, Tokar & Olasehinde-Williams, 2020). The introduction of the Millennium Development Goals (MDGs) in 2000 is another reason put forward for the rekindling of interest in the aid-development nexus. The advent of these goals, it is argued, placed significant pressure on donor nations to raise the assistance being offered, Maruta & Cavoli (2017). Moreover, the recently introduced 2030 agenda and the sustainable development goals (SDGs) are designed to revitalise the aid effectiveness.

The point put forward by these studies is that foreign assistance and institutional quality are pivotal and determine economic growth in the long run.

Therefore, these questions come to mind: What impact does foreign assistance have on economic growth in selected heavily indebted poor sub-Sahara African countries? Is there a significant long-run relationship between foreign assistance and economic growth in selected heavily indebted poor sub-Sahara African countries? This study's goal is to assess the impact of foreign assistance and institutional quality on economic growth in selected

heavily indebted poor sub-Sahara African countries. This study makes a significant addition by considering whether there is a significant interactive development of foreign assistance and institutional quality in selected heavily indebted poor sub-Sahara African countries.

The remainder of the article is divided into the following sections: (II) literature review, (III) data, theoretical and methodological framework, (IV) estimation of results and (V) recommendations and Conclusion.

2.0 Literature review

Many studies have been done to analyze the impact of foreign assistance and institutional quality on economic growth. At this juncture, different studies are reviewed.

Roa D. T. et al (2023) examine the interrelationship among foreign assistance, foreign direct investment (FDI) and economic growth in South-East Asia (SEA) and South Asia (SA) during 1980–2016. The findings from their empirical estimations suggest that while foreign assistance is negatively associated with FDI as well as growth, FDI positively influences growth. They infer that low-income SEA and SA economies should focus on channelizing governmental financial assistance to private sector for domestic investment, macroeconomic stabilization, trade openness, and efficient utilization of aid flows, in order to attract, absorb and reap the benefits of complementing FDI flows and sustaining higher economic growth.

Edo S. et al (2023) determine the impact of disaggregate official development aid (ODA) on economic growth, and ascertain whether bilateral and multilateral aid played complementary role with private sector, government sector and external sector in driving growth of sub-Saharan African economies. The vector error correction model (VECM) and generalized method of moments (GMM) techniques were adopted for the period 1980-2020. The results reveal that the effect of bilateral aid is positive, and more significant than multilateral aid.

In a similar study by Alika and Oladipo (2022), they adopted the Autoregressive Distributed Lag (ARDL) model to analyse the short and long-run impacts of institutional quality and foreign direct investment (FDI) inflow on economic growth in ECOWAS member countries, using time series data sourced from the World Bank, UNCTAD and Freedom House for the period 1990 to 2020, they went a step further to ascertain whether the impact is homogeneous in the region or not. Amongst others, the results found a positive relationship between FDI inflow and growth in ECOWAS. However, this was not statistically significant in the short run. Furthermore, it was discovered that the institutional quality variable of political regime was found to be insignificant both in the short and long run. However, the impact of coup was negative and statistically significant at 10 per cent in the short run and long run. It was also discovered that the impact of foreign direct investment and institutional quality on economic growth were not homogeneous across ECOWAS member countries such that while the impact was positive for some countries, it was negative for others. The statistical significance of the impacts varied across the economies.

Babalola and Shittu (2020) examined the roles of institutions on the nexus between foreign assistance and economic growth in the case of West African nations, using the autoregressive distributed lag (ARDL) method over the period 1996-2017. Empirical outcomes revealed that foreign assistance has no impact on economic growth; however, the impact was negative when the institutional variable was introduced into the model. In addition, the interaction effect of institution and foreign assistance reduces the inverse impact of foreign assistance on economic growth, while trade openness and government size revealed negative impacts on the economic growth of the region. The study advocated that the government and policymakers focus on building formidable social, economic, and political institutions. The policy would not only reduce the adverse effect of foreign assistance on economic growth, but it would also stimulate competitiveness for domestic and foreign capital, consequently dipping reliance on foreign assistance.

Ekanayake and Chatrna (2010) in their study examines the effects of foreign assistance on the economic growth using a case study of 85 developing nations, using, annual frequency data comprising of Africa, Asia, Caribbean, and the Latin America between the period 1980-2007. For better comprehension of the study argument, the study analysis the assumption as it relates with fact that foreign assistance can help to promote economic growth and hence economic growth in the developing countries of the world. This assumption was examined through panel data study while controlling for provincial variations and variations in income levels in the sampled countries. The study argued that, although preceding studies are usually varied, the current study outcomes also suggest that foreign assistance has varied impacts on economic growth in developing countries.

Kandil (2009) obtained mixed evidence on the role of institutional quality among 16 countries in the Middle East and North Africa (MENA). The study found that some institutional quality metrics stimulate economic growth. A number of additional articles have also examined the relationship between institutions and growth from other angles, and the bulk of them found that weak institutional framework may actually slow growth.

In the 90s, several empirical literatures examined the impact of foreign assistance on macroeconomic objectives. Most of the authors (see Nyoni, 1998; Burnside & Dollar, 2000; Pallage & Robe, 2001; Turnorsskey, 2008) argued that government intervention and sound macroeconomic policies are essential ingredients a nation must have for foreign assistance to positively impact economic growth. Without these drivers, foreign assistance

could negatively influence the recipient countries' economic performance and hence, economic growth and development at large. For instance, Nyoni (1998) argued that increased foreign assistance negatively influenced effective real exchange rate level in the case of Tanzania. This situation is experienced, since increased foreign assistance enhances (appreciation in exchange rate) real exchange rate.

3.0 Data, Theoretical and Methodological framework

3.1 Data and Study variables

The data set used in this paper refers to annual panel data covering the period 1990 to 2021. The data used for the study were sourced from the World Development Indicators and World Governance Indicators of the World Bank. The variables used for the study include the economic growth rate (GDP), institutional quality, foreign assistance, trade openness, education, investment, and inflation. All the variables, except inflation, are converted into logarithmic forms before conducting econometric analysis. The sub-Saharan countries selected for this study are those that are listed as heavily indebted poor African countries by the joint IMF-World Bank initiative. This initiative was created to ensure that no poor country lacks access to debt relief and aid inflow. To date, about 37 countries have benefited from the packages provided under this scheme and 31 of them are African countries. Only 19 sub-Saharan African countries with sufficient historical data are selected for this study. They are Angola, Benin, Burundi, Cameroon, Congo Republic, Gambia, Ghana, Guinea, Kenya, Madagascar, Malawi, Mali, Mozambique, Niger, Senegal, Sierra Leone, Sudan, Togo, and Uganda.

Table 3.1 Variables, Sources and Expectations

Variables	Expectation	Source
GDP growth rate	Positive	World Bank Development Indicators (2021)
Institutional Quality (IQ)	Negative	World Bank Governance Indicators (2021)
Trade Openness (TOP)	Negative	World Bank Development Indicators (2021)
Education (EDU)	Positive	World Bank Development Indicators (2021)
Inflation (INF)	Negative	World Bank Development Indicators (2021)
Investment (INV)	Positive	World Bank Development Indicators (2021)
Foreign Assistance (FAS)	Positive	World Bank Development Indicators (2021)

3.2 Theoretical Framework

This section discusses the theoretical framework on which the empirical analysis is built to examine the role of foreign assistance on economic growth in sub-Saharan African countries. For this study, the model for the foreign assistance-economic growth nexus is built on the neoclassical growth model specification. Four key variables are incorporated in the panel-based model—the output designated as (Y), labour as (L), capital as (K) and effective labour or technology as (A). The Solow-growth production function model is incorporated as shown in equation (1).

$Y_t = f(K_t, A_tL_t)$ (1)

The production function is built on the assumption of a constant return to scale (CRS), in a situation where output is stated in unit of real labour input, as specified in equation (2).

$y = f(k)$ (2)

The specified production function satisfies the following conditions:

$f(0) = 0, f'(0) = \infty, f'(\infty) = 0, f'(k) \succ 0, f''(k) \prec 0,$

And takes the form of the Cobb-Douglas production function process as shown below.

$F(\frac{K}{AL}) = (AL)^{1-\propto}K^{\propto}$, where $0 < \propto < 1$

Given that $k = K/AL$ changes in stock of capital labour ratio over time is as follows:

$y = k^{\propto}$

$k'(t) = sf(k(t)) - (n + g + \partial)\, k(t)$ (3)

Equation (3) reveals that the rate of change in stock of capital per labour ($k'(t)$) is the change between real investment per unit of effective labour ($sf(k(t))$) and the break-even investment ($(n + g + \partial)\, k(t)$). A rise in saving (s) changes the real investment, $sf(k(t))$ in such a way that k^* changes (rises). This gradually increases k' until it is in symmetry with k^*. A perpetual rise in s (savings) would momentarily increase (capital stock) k. In this situation, k increases temporarily, until it gets to a level where further s would only be used to sustain a constant k. Likewise, a rise in savings (s) would influence an early rise in (g) the growth rate of output per labour hour till it spreads to an upper level where (g) increases no further. Largely, variation in savings (s), would lead to a level influence but not growth influence on output per labour hour. The progression of the capital stock per unit of effective labour is given in equation (4) as follows.

$k' = sf(k) = (n + g + \partial)\, k$ (4)

Using the intensive Cobb-Douglas form.

$f(k) = k^{\propto}$

Yield,

$k' = sk^{\propto} - (n + g + \partial)\, k$ (5)

Here, k the balance growth path takes the value of zero, that is, investment per unit of effective labour is equivalent to the break-even investment per unit of effective labour. Thus, k is constant. Indicating k^* as balanced-growth path value in equation (6).

$sk^{*\propto} = (n + g + \partial)\, k'$ (6)

By rearranging equation (6) to decipher for k^*, equation (7) is as follows:

$k^* = \left(\frac{s}{(n+g+\partial)}\right)^{1}/_{1-\propto}$ (7)

To substitute k^* (the balanced-growth-path value of output per unit of effective labour) into the exhaustive production function, that is, $y = k^{\propto}$, equation (8) is specified as follows:

$y = \left(\frac{s}{(n+g+\partial)}\right)^{\alpha}/_{1-\propto}$ (8)

In addition, the Ramsey–Cass–Koopmans (RCK)3 model (another neo-classical theory) has the same balanced growth path, as specified below:

$k' = f\big(k(t)\big) - c(t) - (n + g)k(t)$ (9)

Here, $f\big(k(t)\big) - c(t)$ is the real investment (synonymous with $sf(k)$ of the Solow model), that is, the change between output, consumption yields and the break-even investment. Equation (9) is adjusted to include institutional policy to accommodate the impact of the government expenditure in equation (10) as follows:

$k' = f\big(k(t)\big) - c(t) - I(t) - (n + g)k(t)$ (10)

The purpose of incorporating institutional policy in the model is to match the monetary policy variable in equation (8). The institutional policy incorporated into equation (9) is the fiscal policy variable. This is done with the aim of sustaining economic stability in the growth model.

Equation (7) is assumed to be linear in natural logarithms. Thus, differencing equation (7) with respect to time, an expression recounting the drivers of GDP growth rate is attained, where savings (s) is the monetary policy variable of the government. Inflation is factored in to capture the monetary policy variable in the model. In addition, population growth (n) is incorporated to capture the neoclassical theory of balanced growth path, while investment is proxied for (g) the growth rate of capital. The institutional policy variable is proxied for fiscal policy to capture government expenditure in equation (9).

3.3 Methodology and Model Specification

Long-run impacts in panel regression analyses characterized by cross-sectional dependence, slope heterogeneity and unit roots are best estimated through the augmented mean group (AMG) estimator of Eberhardt and Teal (2010) and the common correlated effects mean group (CCEMG) estimator of Pesaran (2006). The AMG technique estimates a pooled regression model that is augmented with year dummies through first-order difference OLS. A new variable representing the common dynamic process is then produced from the year dummy coefficients. The newly created variable is then included as an additional extra regressor in each group-specific regression model separate from the intercept to capture time-invariant fixed effects. The estimation technique follows a two-stage procedure shown below:

Stage 1: $\Delta y_{it} = \beta_i \Delta X_{it} + \sum_{t=2}^{T} c_t \Delta D_t + e_{it} \rightarrow \hat{c}_t \equiv \hat{v}_t$

Stage 2: $y_{it} = \delta_i + \beta_i X_{it} + d_i \hat{v}_t + e_{it}$, $\hat{\beta}_{AMG} = N^{-1} \sum_i \hat{\beta}$

In the first stage, a standard FD-OLS regression with $T-1$-year dummies (D_t) is conducted in first differences, and the year dummy coefficients ($\hat{v}_t$) representing the common dynamic process are created. In the second stage, the year dummy coefficients ($\hat{v}_t$) are added in the N standard country regressions along with a linear trend term added to capture omitted idiosyncratic processes evolving over time.

On the other hand, the CCEMG estimator permits cross-sectional dependence, as well as time-variant unobservables with heterogeneous effects across panel members (Pesaran, 2006). The CCEMG procedure requires the addition of the cross-section mean values of the regressand and regressors as extra independent variables when employing unit by unit OLS regressions. The CCEMG approach has satisfactory small sample properties, is robust to structural breaks, unit roots, non-cointegrated common factors and certain serial correlation. It is also a robust estimator of short-run dynamics (Kapetanios, Pesaran & Yamagata, 2011). The CCE estimator for the ith country's slope coefficient is shown below:

$\hat{\beta}_{CCE,i} = (E'_i \bar{M} E_i)^{-1} E'_i \bar{M} Y_i$ (24)

Where: $\bar{M} = I_T - \bar{H}(\bar{H}'\bar{H})^{-1}\bar{H}$, $\bar{H} = (\tau, \bar{Z})$, $\tau = (1, \dots, 1)'$ and $\bar{Z}$ represents a Tx2 matrix of observations on $\bar{Z}_t, t = 1, \dots, T$.

The CCEMG estimator is the average of the individual CCE estimators given as:

$\hat{\beta}_{MG} = \frac{1}{N} \sum_{i=1}^{N} \hat{\beta}_{CCE,i}$

Feeny and McGillivray (2008), in their study, argued that foreign assistance is subject to diminishing returns,

due to recipient countries having absorptive capacity restrictions. This relates with the foreign assistance recipient's ability to make use of the inflows efficiently. To capture this relationship, this study incorporates foreign assistance square term into the model. This added series will help to estimate at what point foreign assistance becomes problematic or enhances economic growth, while controlling for other drivers of growth in the sampled region. Improving on the study of Karras (2006), this study incorporates into the growth model several drivers that are assumed to contribute to growth.

In the light of the above, equation (11) is used as the model to investigate the effect of foreign assistance on economic growth in some poor sub-Saharan countries in Africa.

$$\ln GDPPC_{it} = \beta_0 + \beta_1 \ln TRAD_{i,t} + \beta_2 \ln EDUC_{i,t} + \beta_3 INF_{i,t} + \beta_4 \ln INV_{i,t} + \beta_5 I_{i,t} + \beta_6 \ln FAS_{i,t} + \beta_7 \ln (I * FAS)_{i,t} + \varepsilon_{i,t} \quad (11)$$

Here, all the variables are expressed in their natural logarithms, except for inflation, which is reported in percentage point. GDPPC is the gross domestic product per capita (measures the level of output), TRADE is the trade openness, EDUC is the education, FAS depict the foreign assistance, INV is the level of investment, INF is the general price level (inflation), I represents institutional quality and I*FAS is the interaction of institutional quality and foreign assistance. In addition, the parameters $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7$ and β_8 respectively display the effects of trade, education, inflation, investment, institutional quality, foreign assistance and its square term and the interaction term on economic performance.

4.0 Estimation of Results

4.1.0 Descriptive and Summary statistics

To begin with, the country-specific trends of the selected variables over the sampled period are presented in Figures/tables below. A summary of the statistical properties of the variables are also reported in Table 4.1. The amount of foreign assistance received across the sampled countries ranges between US$46.49 million and US$3.35 billion, with a mean value of US$764 million and a standard deviation of US$630 million. Per-capita GDP across the selected countries ranges between US$113.6 and US$5942.3, with an average value of US$1035 and a standard deviation of US$1095.6. Institutional quality has a maximum value of 0.16 points, a minimum value of -1.662 points, an average value of -0.819 points and a standard deviation of 0.4 points. With regards to trade openness, the values range between a minimum of 0.784 percent and a maximum of 161.4 percent, it also has a mean of 62.18 percent and a standard deviation of 29.3 percent. Education, proxied by primary school enrolment, has a maximum value of 149.3, a minimum value of 28, and a mean value of 62.18 and a standard deviation of 24.62. As for inflation, the range is between a minimum of -3.1% and a maximum of 4145.1%. It has a mean value of 20.56%. It also has a standard deviation of 197.1%. Investment ranges between -20,612,328 and 40,000,000,000, with an average value of 3,780,000,000 and a standard deviation of 5,650,000,000. In all cases, the results from the Jarque-Bera test for non-normality indicate that the variables are not normally distributed.

Table 4.1. Statistical properties of variables

Variable	Mean	Max	Min	Std. dev.	Skew.	Kurt.	J-B
FAS	7.64E+08	3.35E+09	46490002	6.30E+08	1.343	4.738	201.935***
GDPPC	1034.965	5942.293	113.5673	1095.625	2.448	9.022	1192.334***
IQ	-0.819	0.160	-1.662	0.400	0.140	2.188	13.817***
TRADE	62.180	161.392	0.784	29.329	1.035	4.006	104.632***
EDUC	95.623	149.307	28.008	24.624	-0.219	2.603	6.617**
INF	20.563	4145.106	-3.099	197.125	20.530	429.746	3430905***
INV	3.78E+09	4.00E+10	-20612328	5.65E+09	3.100	14.639	3435.519***

Notes: (1) Skew, Kurt and J-B, denote skewness, kurtosis and the statistics of the Jarque-Bera test for normality (2) ***and ** denote statistical significance at 1% and 5%, respectively.

4.1.2 Stationarity Test and Lag Selection Criteria

The panel stationarity test results show that the variables are stationary at either first difference or level.

Table 4.3. Panel CIPS Unit Root Test

Variables	Constant		Constant & Trend		
	Level	First difference	Level	First difference	Decision
FAS	-2.692***	-5.567***	-3.325***	-5.614***	I(0)
GDPPC	-1.571	-4.631***	-2.507	-4.865***	I(1)
IQ	-2.409	-4.778***	-2.435	-5.003***	I(1)
TRADE	-2.101	-5.091***	-2.887	-5.096***	I(1)
EDUC	-2.950	-4.926***	-2.170	-4.814***	I(1)
INF	-4.969***	-5.776***	-5.136***	-5.829***	I(0)
INV	-1.495	-4.405***	-2.475	-4.448***	I(1)

Notes: ***and ** denote statistical significance at 1% and 5%, respectively.

4.1.3 Cointegration and the Long-Run Relationship

To test for long-run relationship between the variables, the Durbin-Hausman cointegration tests of Westerlund (2008) is employed. The test outcomes generated are valid even when cross-sectional dependence and slope heterogeneity are present in the data series. Another advantage of the tests is that they are still able to produce valid estimates even when the variables are integrated of a mixed order (I(0) and I(1)) as it is in this study; the only condition required being that the dependent variable is non-stationary. As reported in Table 4.4, the significant DHg and DHP test-statistics leads to the rejection of the null hypothesis on no cointegration. This leads to the conclusion that a long-run relationship exists between economic growth and foreign assistance, along with the other regressors included in the model.

Table 4.4. Durbin-Hausman Cointegration Test

DH_g	DH_P
33.087*	15.693*
(0.056)	(0.092)

*Notes:(1) * denotes statistical significance at 10%. (2) Standard p-values are in parentheses.*

4.2 ESTIMATED RESULTS

4.2.1 Long-run Estimation Result

Given the evidence of panel cointegration, the long-run relations of the model are first estimated through the augmented mean group procedure. Table 4.5 presents the estimation outcomes. The result shows that the conditional marginal impact of foreign assistance on per-capita GDP, when institutional quality is zero, is positive and statistically significant for the panel of poor African countries sampled. This is an indication that official assistance, by itself, triggers economic growth in poor African countries.

Thus, we conclude that, foreign assistance has significant impact the economic growth in these heavily indebted poor sub-Saharan African countries. The coefficient estimate suggests that a percentage increase in foreign assistance can induce a 0.53 percent increase in per-capita GDP when institutional quality is zero.

Table 4.5. Augmented Mean Group (AMG) Results (dependent variable: GDPPC)

Variables	Long-run coefficients
FAS	**0.530*** **
	(0.000)
IQ	**0.649*** **
	(0.000)
I*FAS	**0.006*** **
	(0.000)
TRADE	**0.352*** **
	(0.000)
EDUC	**0.204*** **
	(0.000)
INF	**-0.006***
	(0.052)
INV	**0.388*** **
	(0.000)
Constant	**8.889*** **
	(0.000)
R-Squared adjusted	**0.82**
F-stat	**780.31*** **

Notes: (1) *** P < 0.01, ** P < 0.05, * P < 0.1. (2) Standard p-values are in parentheses.

Based on the empirical outcomes, we find that, there exist long-run relationship between foreign assistance and economic growth in selected heavily indebted poor sub-Saharan African countries. Institutional quality also exhibits a positive and statistically significant conditional marginal relationship with economic growth in the panel of sampled countries when foreign assistance is absent. The AMG result shows that a percentage point rise in institutional quality will trigger a 0.649 percent rise in per-capita GDP when official assistance is zero. Moreover, the interaction between official assistance and institutional quality also has a statistically significant and positive.

With regards to the other control variables, the results show that trade openness has a positive and statistically significant impact on economic growth. Based on the coefficient, one percent increase in trade openness leads to 0.352 percent increase in per-capita GDP. The result is significant at 1 percent level of significance. As for education, the impact on economic growth is again positive and statistically significant at 1% significance level. The result shows that when school enrollment increases by a percent, per-capita GDP is expected to increase by 0.204 percent. The result however shows that the impact of inflation on economic growth is negative. The result

is statistically significant at 1%. The coefficient indicates that a percentage point increase in inflation causes per-capita GDP to decline by 0.6 percent. Investment on the other hand has a positive impact on economic growth. When investment increases by a single percent, per-capita GDP can be expected to rise by 0.388 percent. The result is again significant at 1 percent level of significance. The adjusted R-squared value of 0.82 indicates that approximately 82 percent of the variation in per-capita GDP in the panel of sampled countries can be explained by the regressors included in the econometric model. Also, the statistically significant F-test of overall significance also confirms that the model provides a better fit to the data than an alternative that contains no regressors.

Finally, we investigate an interactive development effect of foreign assistance and institutional quality in selected heavily indebted poor sub-Saharan African countries. As a form of robustness check, we again establish the long-run relations of the model through the common correlated effects mean group procedure. As reported in Table 4.6, the results obtained are quite similar in terms of the direction of impact to those obtained from the augmented mean group procedure. The results again show that foreign assistance has a positive conditional marginal effect on per-capita GDP, institutional quality has a positive conditional marginal impact on per-capita GDP, and their interaction is also positive. The results are all statistically significant at 10% level of significance or better.

Table 4.6. Common Correlated Effects Mean Group (CCEMG) Results
(Dependent variable: GDPPC)

Variables	Long-run coefficients
FAS	**0.197****
	(0.040)
IQ	**0.204***
	(0.056)
I*FAS	**0.004****
	(0.035)
TRADE	**0.421****
	(0.047)
EDUC	**0.640****
	(0.026)
INF	**-0.009****
	(0.034)
INV	**0.342*****
	(0.006)
Constant	**1.687**
	(0.582)
R-Squared adjusted	**0.76**
F-stat	**727.75*****

Notes: (1) *** P < 0.01, ** P < 0.05, * P < 0.1. (2) Standard p-values are in parentheses.

Concerning the other control variables, the common correlated effects mean group results likewise indicate the following: trade openness, education, and investment all have positive and statistically significant impacts on economic growth. The results are statistically significant at 10 percent or better. As before, the impact of inflation is negative and statistically significant at 5 percent. The adjusted R-squared value of 0.76 obtained from this procedure indicates that approximately 76 percent of the variation in per-capita GDP in the panel of sampled countries can be explained by the regressors included in the econometric model. The statistically significant F-test of overall significance again confirms that the model provides a better fit to the data than an alternative that contains no regressors.

5.0 Conclusion and Recommendations

Based on the result, we find that the conditional marginal impact of foreign assistance on per-capita GDP, when institutional quality is zero, is positive and statistically significant for the panel of poor African countries sampled. This is an indication that official assistance, by itself, triggers economic growth in the selected sub-Saharan African countries. This outcome is in line with the existing study of Kirikkaleli, Adeshola, Adebayo and Awosusi (2021) and Adebayo and Beton Kalmaz (2020).

Institutional quality also exhibits a positive and statistically significant conditional marginal relationship with economic growth in the panel of sampled countries when foreign assistance is absent. The AMG result shows that a percentage point rise in institutional quality will trigger a 0.649 percent rise in per-capita GDP when official assistance is zero. Moreover, the interaction between official assistance and institutional quality also has a statistically significant and positive. This is an indication that: the greater the quality of institutions in poor African countries, the higher the size of the impact of official assistance on economic growth.

Furthermore, the larger the size of foreign assistance, the higher the impact of institutional quality on

economic growth in the sampled countries. All the results are statistically significant at 10 percent level of significance. Empirical result show that foreign assistance raises economic growth. This does not imply that; sub-Saharan African region should heavily rely on foreign assistance, without putting in place specific developmental efforts. Thus, we are of the opinion that, policymakers should regulate the allocation process of foreign assistance. In doing so, production capacity for this region should be raised, while they distinguish between the amount of foreign assistance needed to lessen poverty and the levels of foreign assistance required to achieve sustainable economic growth, and hence economic growth. This will induce policymakers to utilise funds prudently.

6. References

Abdul, Z., Adamu, A., & Ogwuche Iduh, P. (2018). Effect of Foreign Aid on Economic growth in Nigeria. Abdul, ZH ADAMU, A. & Ogwuche, IP (2018). Effect of Foreign Aid on Economic growth in Nigeria. AE-Funai Journal of Accounting Business and Finance (FJABAF), 3(1), 15-29.

Adebayo, T. S., & Beton Kalmaz, D. (2020). Ongoing debate between foreign aid and economic growth in Nigeria: a wavelet analysis. Social Science Quarterly, 101(5), 2032-2051

Arvin, M., & Baum, C. F. (1997). Tied and untied foreign aid: a theoretical and empirical analysis. Keio Economic Studies, 34, 71-79.

Alika, S. & Oladipo, O. (2022). Institutional Quality, Foreign Direct Investment and Economic Growth: Evidence from ECOWAS member countries. Available at ISSN (paper) 2222-1700 ISSN (online)2222-2855

Babalola, S., & Shittu, W. (2020). Foreign aid and economic growth in West Africa: examining the roles of institutions. International Economic Journal, 34(3), 534-552.

Balcilar, M., Tokar, B., & Olasehinde-Williams, G. (2020). Examining the interactive growth effect of development aid and institutional quality in sub-Saharan Africa. Journal of Development Effectiveness, 12(4), 361-376.

Burnside, C., & Dollar, D. (2000). Aid, policies, and growth. American Economic Review, 90(4), 847-868.

Chaponnière, J. R. (2009). Chinese aid to Africa, origins, forms and issues. The New Presence of China in Africa, 55, 82. Edited by van Dijk.

Edo, S., Matthew, O., & Ogunrinola, I. (2023). Bilateral and multilateral aid perspectives of economic growth in sub-Saharan Africa. African Journal of Economic and Management Studies, 14(1), 1-17.

Eberhardt, M., & Teal, F. (2010). Productivity analysis in global manufacturing production. Discussion Paper 515, Department of Economics, University of Oxford. http://www.economics.ox.ac.uk/research/WP/pdf/paper515.pdf.

Ekanayake, E. M., & Chatrna, D. (2010). The effect of foreign aid on economic growth in developing countries. Journal of International Business and Cultural Studies, 3, 1.

Kirikkaleli, D., Adeshola, I., Adebayo, T. S., & Awosusi, A. A. (2021). Do foreign aid triggers economic growth in Chad? A time series analysis. Future Business Journal, 7(1), 1-17.

Murshed, M., & Khanaum, M. M. (2012). Impact of foreign aid in the economic growth of recipient country. Journal of the Bangladesh Association of Young Researchers, 33-37.

Nyoni, T. S. (1998). Foreign aid and economic performance in Tanzania. World Development, 26(7), 1235-1240.

Pallage, S., & Robe, M. A. (2001). Foreign aid and the business cycle. Review of International Economics, 9(4), 641-672.

Turnovsky, S. J. (2008). The role of factor substitution in the theory of economic growth and income distribution: two examples. Journal of Macroeconomics, 30(2), 604-629.

Pesaran, M. H. (2006). Estimation and inference in large heterogeneous panels with a multifactor error structure. Econometrica, 74(4), 967-1012.

Westerlund J. (2008). Panel cointegration tests of the Fisher effect. Journal of Applied Econometrics, 23(2), 193233.

Rao, D. T., Sethi, N., Dash, D. P., & Bhujabal, P. (2023). Foreign aid, FDI and economic growth in South- East Asia and South Asia. Global Business Review, 24(1), 31-47.